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# Coast to Cactus Weather Examiner

National Weather Service - San Diego

The National Weather Service Spotter Newsletter for Extreme Southwestern California

# Big Storms and Record Rainfall

**October**

October became the wettest on record for most areas, and in a few cases, broke records that stood since the 1800s. It was truly an exceptional month for rainfall over southwest California for any time of the year, and it came a day after San Diego's Lindbergh Field set a new mark for consecutive days with no measurable rainfall at 182. The jet stream strengthened and dipped well to the south during the third week, which brought unseasonably heavy and widespread rain to areas from the mountains west to the coast. This effectively pushed rainfall into the record books for many areas between the 17th and 21st. Widespread reports of urban and small stream flooding were received throughout the period. Some flash flooding, mud, rock and debris flows were reported in the burn areas. Rainfall amounts were impressive for so early in the season. Around one foot of rain fell on the favored mountain slopes with generous 2 to 3 inch amounts on the coastal plain. The northern deserts reported between one and two inches, while the southern deserts picked up less than one half inch.

**In This Issue**



After a few days to dry out, another very cold storm dropped down the west coast and sent a strong cold front through the region late on the 26th through the morning of the 27th. Very heavy rain and strong winds accompanied the front, with showers lingering into the 28th. Most stations had well in excess of 1000% of normal. Even the deserts logged several times their normal amount for the month. General rains of from 2 to 5 inches were reported from the coastal mountain slopes to the beaches. Snow was reported above 5000 feet where as much as two feet was reported in Big Bear City. Deserts generally received less than an inch. There were numerous reports of flooding, mud slides, and road washouts. The San Diego River overflowed its banks for a time which caused flooding of low water crossings, and low lying areas near the river in Mission Valley.

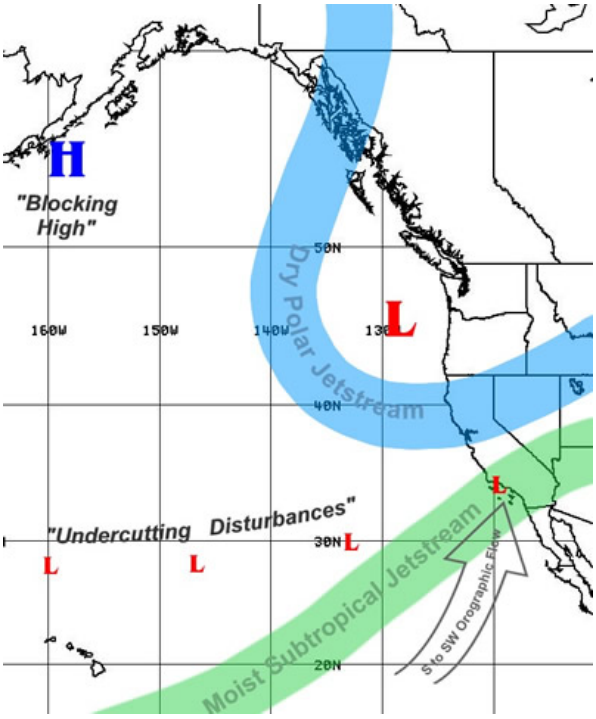
**November**

A deep, cold upper low developed rapidly over southern California as a short wave trough from the north rapidly intensified during the evening of the 20th. Showers and thunderstorms broke out over the San Bernardino and San Gabriel Mountains and drifted south through the night producing numerous one half to one inch rainfall amounts. Snow levels fell to around 1000 feet, with accumulations reported in the Inland Empire. Menifee and Elsinore both

reported 3 inches. Yucaipa and Calimesa measured as much as 9 inches. In the high deserts as much as 14 inches of snow accumulated, while the San Bernardino Mountains had two feet. In the high deserts and mountains, snow and strong winds halted travel. The San Diego County Mountains only reported about 3 inches. Local urban and small stream flooding was reported with some of the heavier showers and thunderstorms. Many of the heaviest precipitation totals occurred in the desert and those areas of the mountains with an exposure to northeast, upslope flow.

**December and Early January**

A deep, cold storm system off the central California coast sent several disturbances over the region before getting kicked east as an open wave on the 29th. Very strong southerly flow developed in advance of the system on the morning of the 29th. Widespread wind gusts at the coast exceeded 50 mph, and a few places reported winds above 60 mph. Considerable tree damage was reported. The strong southerly flow provided good orographic upslope flow on south facing slopes where rainfall exceeded one half foot. The very strong flow also kept showers and isolated thunderstorms moving at about 40 knots, which helped limit excessive amounts in any one spot. Two to three inch rains were common, with a half foot or more on the coastal slopes and snowfall of 6 to 14 inches at the higher resorts. The San Diego River crested very close to flood stage, while the San Luis Rey River remained below monitor stage.




A more ominous pattern organized in the eastern Pacific Ocean in early January. Of greatest concern was a "breakthrough" of subtropical moisture that would eventually mix with another cold low that was descending down the west coast from British Columbia. With a blocking high pressure pattern setting up farther out in the Pacific, the second looming concern would be the anticipated prolonged duration of the event as the large upper low pressure system was forecast to become stationary off the coast of Northern California, in an ideal location to stream subtropical moisture northeastward into Southern California.

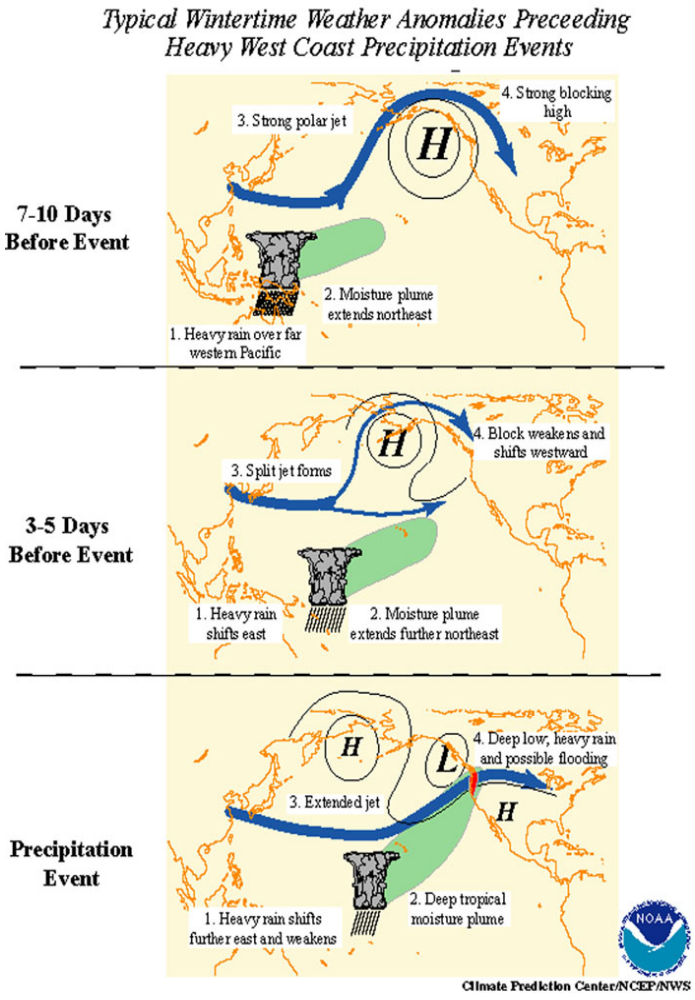
The threat would soon be realized as the initial cold front spread rain into southern California beginning Friday morning, January 7th. This proved to be just the beginning as heavier rains materialized on Saturday that persisted through the remainder of the weekend and into Monday before finally tapering off from northwest to southeast on Tuesday morning, January 11th. Winds were not as strong as the preceding events of late December, but the moisture-laden subtropical air and weak embedded shortwaves rippling along the subtropical jet focused heavy prolonged orographic rainfall with high snow levels into the mountains of Southern California.

The storms caused tragic loss of life, including 10 deaths attributed to a landslide into homes in the small coastal community of La Conchita (Ventura County), and millions of dollars of flood and

storm-related damage throughout southern California. Numerous mudslides occurred throughout the region, with considerable damage to roads and several areas isolated due to washed out roads, debris, etc. All major river basins in Southern California were impacted to some degree by the sheer volume of precipitation that fell from the combined storm periods. The normally dry flood control reservoir above Prado Dam on the Santa Ana River reached a volume of around 100,000 acre-feet with downstream releases of 10,000 cfs. The San Diego River at Fashion Valley just touched flood stage near the end of the storm period as the tail end of the system moved across the basin. For more information, visit the River Forecast Center's web site: **www.wrh.noaa.gov/cnrfc/jan2005storms.php**.

**There's a New Niño in Town: the Madden-Julian Oscillation**

Just as National Weather Service meteorologists exhale after a very grueling two weeks of severe winter weather in the western U.S., NOAA scientists have identified one of the leadingcauses. "A leading climate culprit is the Madden-Julian Oscillation or MJO," said Wayne Higgins, lead climate specialist at the Climate Prediction Center. The MJO is a tropical disturbance that influences the patterns of tropical rainfall every…approximately 30-60 days. It produces El Niño-like features that can influence extreme precipitation events in the western United States. Typically, the MJO is most active during El Niño-neutral and weak-El Niño winters. During the last half of December, the MJO strengthened as enhanced cloudiness and precipitation over the Indian Ocean shifted eastward. By early January, the precipitation associated with the MJO extended into the western tropical Pacific. "As the tropical rainfall associated with the MJO shifted eastward towards the Central tropical Pacific, the jet stream over the North Pacific gradually shifted eastward towards the California coast," said Higgins. "This allowed recent storms to tap a deep-tropical moisture stream that dramatically increased the precipitation over California," Higgins added. For more information, visit




**www.noaanews.noaa.gov/stories2005/s2367.htm**.

**Highlights from 2004**

The first half of the 2004-2005 rainfall season is among the wettest on record at San Diego Lindbergh Field, thanks to the wet October and December. From July 1 to Dec 31, 9.32 inches of rain fell, the fourth highest amount on record (since 1850). The wettest first half of the season occurred in 1965 when 12.73 inches fell.

On October 20, 9.40 inches of rain fell at Lake Arrowhead, making this the most rain that

officially fell in our forecast area in one single day in 2004. The greatest one day snowfall was 24 inches at Big Bear Lake on November 22.

The highest temperature observed in the region in 2004 was 116 degrees at Palm Springs on August 9. The lowest temperature was 8 degrees at Big Bear Lake on November 30 and December 2-4.

**The AMS Annual Convention and WeatherFest**

Meteorologists from around the globe converged on San Diego for the American Meteorological Society's (AMS) Annual Convention the week of January 9. The convention began with WeatherFest, an interactive science and weather fair designed to promote the fascinating field of meteorology to San Diego area families, students and teachers. Nearly 1800 people attended. The event was launched by a special weather balloon release by NWS-San Diego personnel. The NWS in San Diego also staffed a booth during WeatherFest and helped to staff the NOAA booth during the week. Southwest California Skywarn also had a booth during WeatherFest to let people know about the important support given to the NWS in San Diego. Media covered WeatherFest as well as the other talks and programs presented by the world's top meteorologists.


D. L. Johnson, NWS Director, and Kelly, Deputy Under Secretary of Commerce for Oceans and Atmosphere, visited the San Diego forecast office while attending the AMS Annual Meeting. The San Diego staff had an opportunity to informally meet and talk with both Mr. Johnson and Mr. Kelly during their visit, which included updates on the future of NOAA and NWS.

**Quarterly Summary**

Details on the heavy precipitation events are given in this issue's top story, so the following summary only discusses the general weather patterns and temperatures.

**October**

The month started off quietly with a blocking (high pressure) pattern centered over the Pacific Northwest which kept the weather dry and temperatures running slightly below normal, but that all changed after the 16th when San Diego's 182-day dry streak came to an abrupt end. Unseasonably heavy and widespread rain arrived in areas from the mountains west to the coast and rewrote the record books. This effectively brought an early end to the fire season. Temperatures averaged around two degrees below normal.

Daily rainfall records fell on Oct 19, 20 and 28 at Lindbergh Field. The highest wind peak for October was recorded on Oct 20.

San Diego - Lindbergh Field Data

| | Max | Min | Avg | Rain |
|---|---|---|---|---|
| **OCT** | 69.7 | 61.0 | 65.4 | 4.98 |
| Normal | 74.0 | 61.2 | 67.6 | 0.44 |
| Anomaly | -4.3 | -0.2 | -2.2 | 4.54 |
| % of normal | | | | 1132% |
| Max | 76 | 67 | | 2.70 |
| Min | 63 | 53 | | |

**November**

A split flow pattern persisted over the west coast through the first half of November. This dried out the skies a bit after the unprecedented rains of October. For the remainder of the month, a nearly stationary high pressure ridge off the coast favored the development of cold troughs over the interior west. This kept temperatures generally below normal, and brought some additional autumn precipitation to all areas. Temperatures for the month averaged around two degrees below normal.

San Diego - Lindbergh Field Data

| | Max | Min | Avg | Rain |
|---|---|---|---|---|
| **NOV** | 67.0 | 53.1 | 60.1 | 0.33 |
| Normal | 69.9 | 53.6 | 61.8 | 1.07 |
| Anomaly | -2.9 | -0.5 | -1.9 | -0.74 |
| % of normal | | | | 45% |
| Max | 79 | 60 | | 0 |
| Min | 61 | 41 | | |

**December**

Low pressure aloft dominated west coast weather into the first week of the month before a major transition to high pressure brought dry and warmer offshore flow through Christmas. Soon after, the long wave trough evident earlier in the season was re-established, bringing storms with rain and strong winds to wrap up the month. Temperatures for the month averaged near, to slightly below normal.

A record high temperature record (83) was set on Dec 18. A record daily rainfall amount was broken on Dec 28 and 29. A record peak wind gust for December was broken on Dec 29 (58 mph).

San Diego - Lindbergh Field Data

| | Max | Min | Avg | Rain |
|---|---|---|---|---|
| **DEC** | 65.3 | 50.4 | 57.8 | 4.01 |
| Normal | 66.3 | 48.9 | 57.6 | 1.31 |
| Anomaly | -1.0 | 1.5 | 0.2 | 2.70 |
| % of normal | | | | 306% |
| Max | 83 | 57 | | 1.60 |
| Min | 57 | 42 | | |

**Spotter News**

85 new spotters have signed up since October bringing the total number of spotters to nearly 900! The quality of spotter reports continues to increase. Thanks for being specific and only reporting those things significant enough to be found on the "What to Report" guide. Please remember to use the 800 number and online submission form for official and meaningful spotter reports **only** and not to chat about the weather or provide other information. If you have updates to your spotter information, please email me: miguel.miller@noaa.gov.

The new 2005 version of the **Weather Guide** is online. Please read this document for a better understanding of the function of the NWS in our region and for a climate overview and weather history. For a limited time the link is headlined on our home page: **weather.gov/sandiego**, but it is always available to view and print at **www.wrh.noaa.gov/sgx/research/Guide/weather_guide.php?wfo=sgx.**

**Skywarn News**

In a recent changing of the guard this past October, Lee Thomas (KF6POI) was appointed as the new Chairman and Southwest Regional Coordinator for Skywarn. Over the past year and a half, Lee has been active in the program as the Station Manager at WX6SGX and also as the Assistant Coordinator for Skywarn in the San Diego metro area. Lee is an Extra class ham radio operator and has spent several years in emergency communications. First, as a member of San Diego County R.A.C.E.S., and additionally as the Training Officer for the city of Laguna Niguel R.A.C.E.S. When he's not chasing weather his regular job involves a variety of media and marketing endeavors, which he has already put to good use promoting the Skywarn program. We are sure Skywarn will benefit from his enthusiasm and professional efforts.

David Paulino, joins the Southwest Regional Skywarn team as an Assistant Coordinator for Riverside County. An all-out weather enthusiast, family man, an avid amateur radio operator and ambassador to the local community are all titles you can ascribe to David. Since joining the team a short time ago, his first order of business was setting up a Skywarn yahoo group for the southwestern region. With that type of initiative, after only a few days on the job, it looks like Riverside County is going to be in good hands. He currently heads the Temecula C.E.R.T. (Community Emergency Response Team). In addition to his certified Red Cross training, he has also completed several county emergency management programs. Look for him during upcoming Skywarn activations running local nets and promoting the program. Welcome aboard Dave! If you are a Skywarn member or certified spotter and would like to sign up for the new Skywarn Yahoo Group, send David an e mail: djpaulino@netzero.net.

A new web site for the Inland Empire Skywarn is on the way. The site is being set up as a complete tool for monitoring weather activity during activations along with other helpful weather links and information. The new website should be up and operational by Feb 1, so bookmark the URL: **www.sbdrivskywarn.org**.

The long awaited Skywarn apparel will soon be available via the new website. The new line of products includes caps, waterproof windbreakers, sweatshirts and t-shirts. Some sample products are currently being prepared for display online, and should be up on the new site in early February.

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NWS San Diego Weather Spotter web site: weather.gov/sandiego/spotter/spotter.php?wfo=sgx
*Coast to Cactus* can always be found by clicking on spotter and skywarn information.
The *Weather Guide* online: www.wrh.noaa.gov/sgx/research/Guide/weather_guide.php?wfo=sgx
Southwest California Skywarn web site: www.swskywarn.org